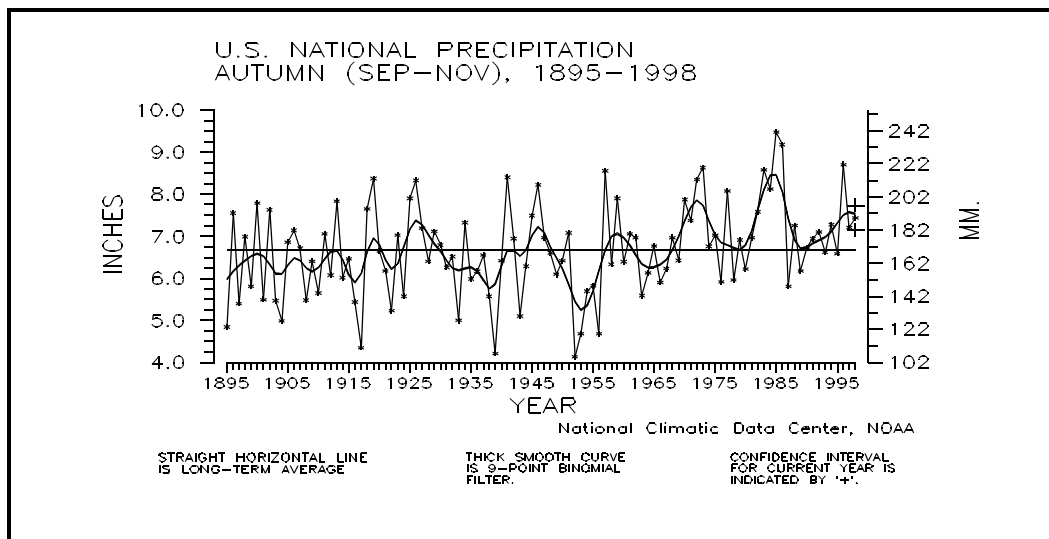
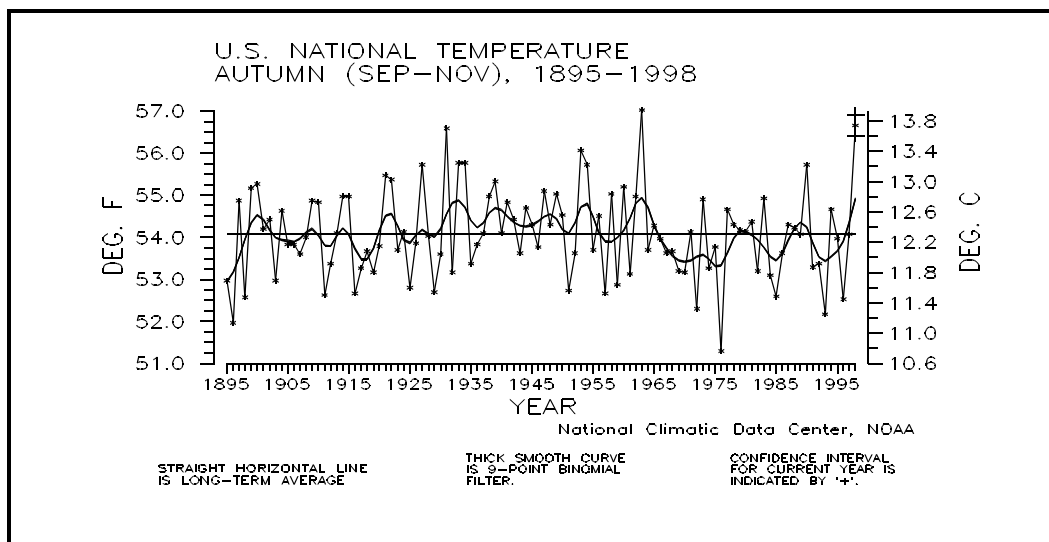


# CLIMATE VARIATIONS BULLETIN



This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from River Forecast Center stations and First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Prediction Center. **THE CURRENT DATA SHOULD BE USED WITH CAUTION.** These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), and the hurricane datasets (TD-9636 and TD-9697). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 828-271-4994 or fax a letter to 828-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 828-271-4800 or sending a fax to 828-271-4876 or by writing to:

National Climatic Data Center, NOAA  
Federal Building  
151 Patton Avenue, Room 120  
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

# UNITED STATES NOVEMBER CLIMATE IN HISTORICAL PERSPECTIVE

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**TABLE 1.** PRECIPITATION AND TEMPERATURE RANKS, BASED  
ON THE PERIOD 1895-1998. 1 = DRIEST/COLDEST,  
104 = WETTEST/WARMEST FOR NOVEMBER 1998,  
104 = WETTEST/WARMEST FOR OCT-NOV 1998,  
104 = WETTEST/WARMEST FOR JUN-NOV 1998,  
103 = WETTEST/WARMEST FOR DEC 1997-NOV 1998.

REGION	NOV 1998	OCT-NOV 1998	JUN-NOV 1998	DEC 1997- NOV 1998
-----	----	-----	-----	-----
PRECIPITATION:				
NORTHEAST	9	19	36	82
EAST NORTH CENTRAL	54	84	63	79
CENTRAL	25	50	78	91
SOUTHEAST	30	9	10	88
WEST NORTH CENTRAL	92	104	101	90
SOUTH	65	95	71	73
SOUTHWEST	49	84	74	82
NORTHWEST	90	77	64	83
WEST	83	78	89	102
NATIONAL	60	87	78	101
TEMPERATURE:				
NORTHEAST	72	71	77	103
EAST NORTH CENTRAL	95	98	101	103
CENTRAL	91	89	96	102
SOUTHEAST	90	94	102	96
WEST NORTH CENTRAL	85	92	97	99
SOUTH	94	98	103	101
SOUTHWEST	83	74	89	81
NORTHWEST	89	65	103	98
WEST	57	40	65	46
NATIONAL	98	98	102	102

**TABLE 2.** EXTREMES, 1961-90 NORMALS, AND 1998 VALUES FOR NOVEMBER. IT SHOULD BE NOTED THAT THE 1998 VALUES WILL CHANGE WHEN THE FINAL DATA ARE PROCESSED.

REGION	PRECIPITATION (INCHES)					
	DRIEST		WETTEST		NORMAL	1998
	VALUE	YEAR	VALUE	YEAR	PCPN	PCPN
NORTHEAST	.88	1917	6.34	1983	3.84	1.71
EAST NORTH CENTRAL	.20	1904	4.03	1931	1.89	1.75
CENTRAL	.71	1904	7.71	1985	3.53	2.22
SOUTHEAST	.83	1931	8.39	1948	3.30	2.06
WEST NORTH CENTRAL	.06	1939	1.63	1896	.74	1.14
SOUTH	.20	1949	5.21	1940	2.63	2.75
SOUTHWEST	.06	1904	2.37	1905	.90	.68
NORTHWEST	.30	1936	7.61	1909	3.78	5.47
WEST	.01	1929	5.56	1926	2.22	2.91
NATIONAL	.88	1917	3.76	1983	2.32	2.18*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .20 INCHES

REGION	TEMPERATURE (DEGREES F)					
	COLDEST		WARMEST		NORMAL	1998
	VALUE	YEAR	VALUE	YEAR	TEMP	TEMP
NORTHEAST	32.3	1901	44.7	1931	38.7	39.5
EAST NORTH CENTRAL	24.9	1959	39.8	1899	33.1	37.4
CENTRAL	35.9	1976	51.4	1931	44.2	46.9
SOUTHEAST	48.2	1976	62.4	1985	55.0	57.7
WEST NORTH CENTRAL	17.3	1985	40.3	1949	30.9	34.8
SOUTH	45.5	1976	58.7	1909	52.5	55.8
SOUTHWEST	36.1	1972	46.9	1949	41.4	43.4
NORTHWEST	27.2	1985	42.8	1899	37.0	39.7
WEST	40.0	1994	51.8	1949	46.0	46.6
NATIONAL	38.2	1911	46.1	1909	42.7	45.4*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .6 DEG. F.

**TABLE 3.** TEMPERATURE AND PRECIPITATION RANKINGS FOR  
JANUARY-NOVEMBER 1998, BASED ON THE PERIOD  
1895-1998.

1 = DRIEST/COLDEST, 104 = WETTEST/HOTTEST.

REGION -----	PRECIPITATION -----	TEMPERATURE -----
NORTHEAST	88	104
EAST NORTH CENTRAL	86	104
CENTRAL	94	103
SOUTHEAST	79	100
WEST NORTH CENTRAL	93	99
SOUTH	64	102
SOUTHWEST	79	89
NORTHWEST	94	101
WEST	103	48
NATIONAL	102	103

**TABLE 4.** EXTREMES, 1961-90 NORMALS, AND 1998 VALUES  
FOR JANUARY-NOVEMBER

REGION	PRECIPITATION (INCHES)					
	DRIEST VALUE	YEAR	WETTEST VALUE	YEAR	NORMAL PCPN	1998 PCPN
NORTHEAST	29.53	1941	48.24	1996	38.18	40.80
EAST NORTH CENTRAL	19.03	1910	35.01	1951	29.06	31.41
CENTRAL	28.89	1901	48.60	1950	39.61	45.09
SOUTHEAST	34.32	1954	59.24	1929	47.16	50.42
WEST NORTH CENTRAL	10.91	1934	22.15	1915	16.27	19.13
SOUTH	22.14	1956	44.31	1957	33.23	34.25
SOUTHWEST	7.31	1956	20.88	1941	12.68	13.75
NORTHWEST	13.75	1929	30.87	1983	23.47	27.74
WEST	7.94	1929	26.48	1983	14.18	25.70
NATIONAL	22.54	1910	31.05	1973	27.16	30.57
REGION	TEMPERATURE (DEGREES F)					
	COLDEST VALUE	YEAR	WARMEST VALUE	YEAR	NORMAL TEMP	1998 TEMP
NORTHEAST	45.3	1904	50.8	1998	47.8	50.8
EAST NORTH CENTRAL	42.2	1917	49.8	1998	45.8	49.8
CENTRAL	52.9	1979	58.8	1921	55.1	58.1
SOUTHEAST	62.2	1940	66.3	1921	63.8	65.8
WEST NORTH CENTRAL	42.1	1950	49.1	1934	45.5	47.7
SOUTH	61.9	1979	66.4	1921	63.7	66.3
SOUTHWEST	51.2	1917	56.4	1934	53.6	54.5
NORTHWEST	45.4	1955	52.0	1934	48.3	50.3
WEST	54.6	1912	59.4	1934	56.5	56.2
NATIONAL	52.4	1912	56.6	1934	54.2	56.3

**TABLE 5.** TEMPERATURE AND PRECIPITATION RANKINGS FOR  
SEP-NOV 1998, BASED ON THE PERIOD 1895-1998.  
1 = DRIEST/COLDEST, 104 = WETTEST/HOTTEST.

REGION -----	PRECIPITATION -----	TEMPERATURE -----
NORTHEAST	8	82
EAST NORTH CENTRAL	56	102
CENTRAL	36	102
SOUTHEAST	41	95
WEST NORTH CENTRAL	94	102
SOUTH	92	103
SOUTHWEST	73	90
NORTHWEST	66	96
WEST	85	60
NATIONAL	81	103



**TABLE 6.** EXTREMES, 1961-90 NORMALS, AND 1998 VALUES  
FOR SEPTEMBER-NOVEMBER

REGION	PRECIPITATION (INCHES)				NORMAL PCPN	1998 PCPN
	DRIEST VALUE	YEAR	WETTEST VALUE	YEAR		
NORTHEAST	5.01	1908	15.54	1977	10.82	7.44
EAST NORTH CENTRAL	2.92	1976	11.82	1941	7.96	7.38
CENTRAL	3.99	1953	14.92	1926	10.20	8.39
SOUTHEAST	4.27	1931	17.71	1929	10.79	9.62
WEST NORTH CENTRAL	1.21	1952	6.41	1946	3.44	4.63
SOUTH	3.79	1917	13.88	1986	9.19	11.95
SOUTHWEST	.95	1956	6.51	1972	3.48	3.62
NORTHWEST	1.51	1936	11.35	1973	7.16	8.13
WEST	.38	1929	7.46	1982	3.85	4.74
NATIONAL	4.14	1952	9.48	1985	7.11	7.44*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .29 INCHES

REGION	TEMPERATURE (DEGREES F)				NORMAL TEMP	1998 TEMP
	COLDEST VALUE	YEAR	WARMEST VALUE	YEAR		
NORTHEAST	45.2	1917	53.8	1931	49.1	50.6
EAST NORTH CENTRAL	41.6	1896	52.5	1931	46.6	50.7
CENTRAL	49.9	1976	61.2	1931	55.4	58.5
SOUTHEAST	59.5	1976	67.9	1919	63.9	66.3
WEST NORTH CENTRAL	38.0	1985	50.3	1963	44.5	48.4
SOUTH	58.2	1976	68.2	1931	63.2	67.0
SOUTHWEST	49.9	1912	56.1	1963	52.9	54.5
NORTHWEST	41.9	1985	50.3	1963	47.3	49.4
WEST	53.2	1916	59.2	1995	56.3	56.5
NATIONAL	51.3	1976	57.0	1963	54.0	56.7*

\* PRELIMINARY VALUE, CONFIDENCE  
INTERVAL + OR - .3 DEG. F.

**TABLE 7.**

STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR OCT-NOV 1998, WHERE RANK OF 1 = DRIEST, 104 = WETTEST, BASED ON THE PERIOD 1895 TO 1998, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF NOVEMBER 1998. RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN -----	PRECIPITATION RANK -----	% AREA DRY -----	% AREA WET -----
MISSOURI BASIN	104	.0%	44.7%
PACIFIC NORTHWEST BASIN	75	.0%	22.0%
CALIFORNIA RIVER BASIN	77	.0%	100.0%
GREAT BASIN	74	.0%	87.0%
UPPER COLORADO BASIN	66	.0%	.0%
LOWER COLORADO BASIN	78	.0%	18.6%
RIO GRANDE BASIN	92	.0%	.0%
ARKANSAS-WHITE-RED BASIN	99	6.9%	31.2%
TEXAS GULF COAST BASIN	99	19.4%	16.3%
SOURIS-RED-RAINY BASIN	102	.0%	23.1%
UPPER MISSISSIPPI BASIN	90	9.5%	9.7%
LOWER MISSISSIPPI BASIN	41	16.3%	.0%
GREAT LAKES BASIN	36	42.3%	.0%
OHIO RIVER BASIN	25	13.7%	.0%
TENNESSEE RIVER BASIN	9	.0%	.0%
NEW ENGLAND BASIN	46	1.2%	7.7%
MID-ATLANTIC BASIN	8	47.9%	5.3%
SOUTH ATLANTIC-GULF BASIN	11	5.7%	.0%

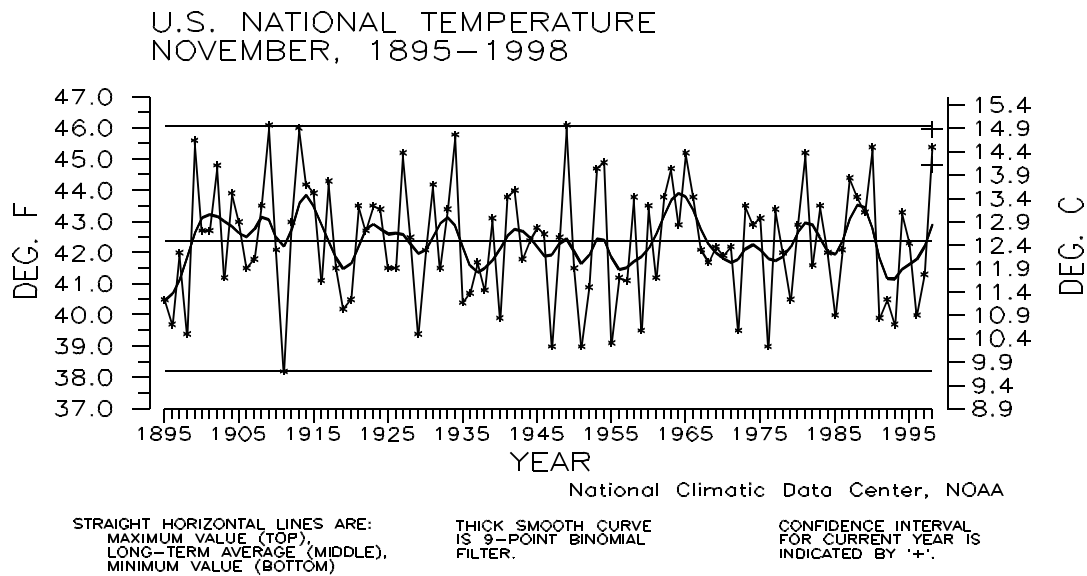


Figure 1: Preliminary data for November 1998 indicate that temperature averaged across the contiguous United States was much above the long-term mean ranking as the 7th warmest November since 1895. Over 25% of the country was much warmer than normal while nearly zero percent of the country was much cooler than normal.

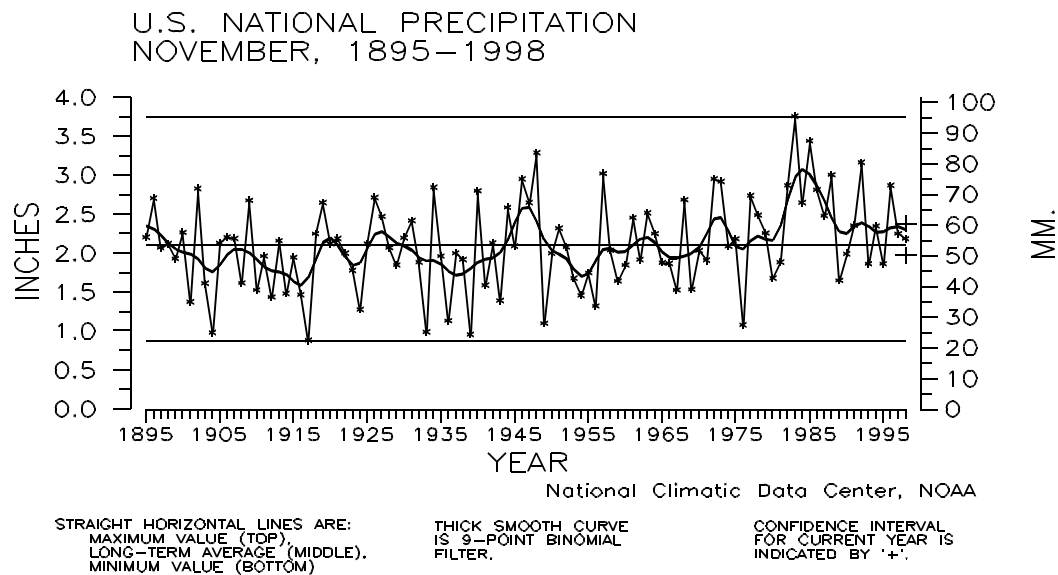


Figure 2: November 1998 was the 45th wettest such month since 1895. Over eight percent of the country experienced much wetter than normal conditions while about eight percent of the country was much drier than normal.

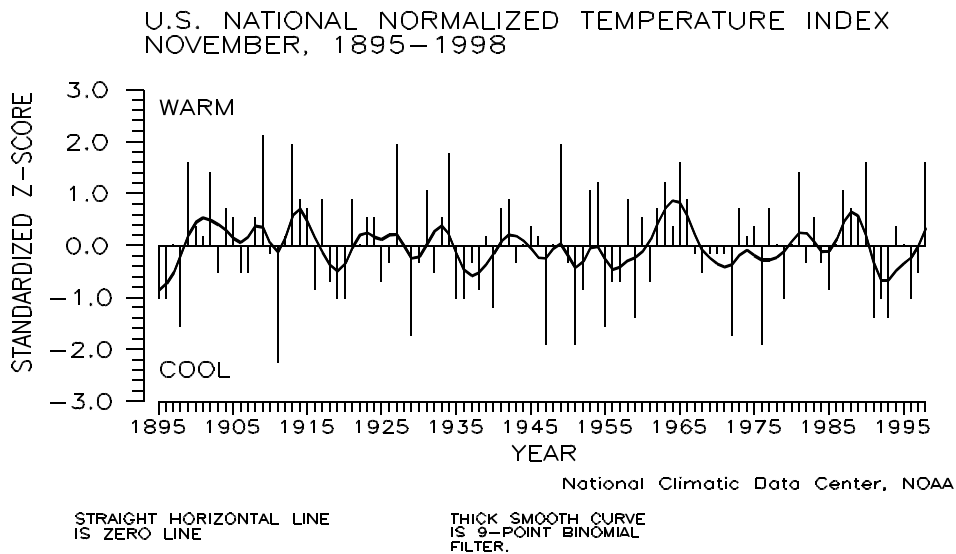


Figure 3: The preliminary national standardized temperature index ranked November 1998 as the sixth warmest such month on record.

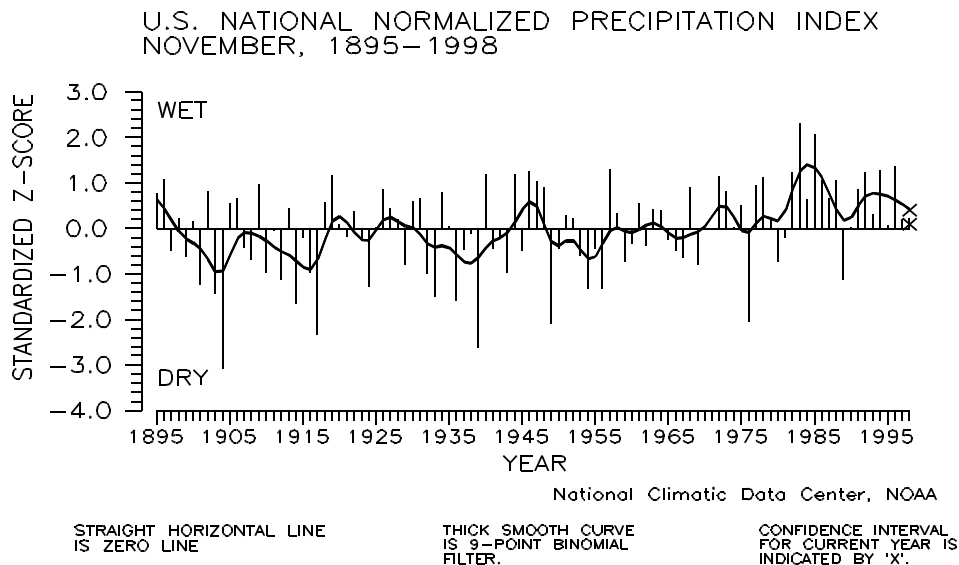


Figure 4: The preliminary national standardized precipitation index ranked November 1998 as the 46<sup>th</sup> wettest such month on record. This standardized z-score is estimated to be accurate to within 0.159 index units.

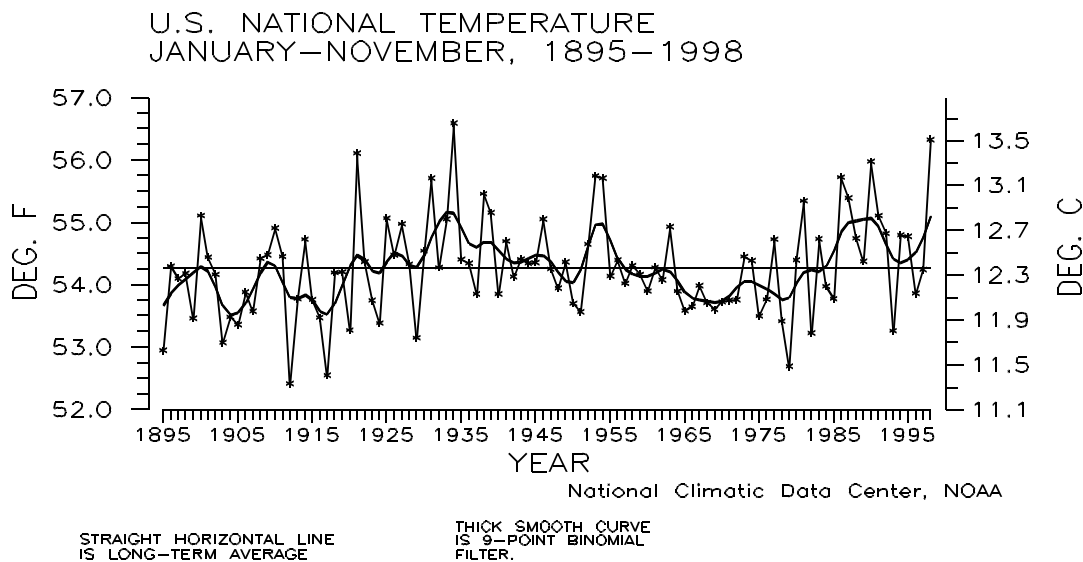


Figure 5: Preliminary temperature data indicate that the year-to-date, January-November 1998, was the second warmest such eleven-month period since records began. About 74% of the country averaged much warmer than normal while nearly zero percent of the country averaged much cooler than normal. Ten of the last thirteen such eleven-month periods have been above- to much-above the long-term mean.

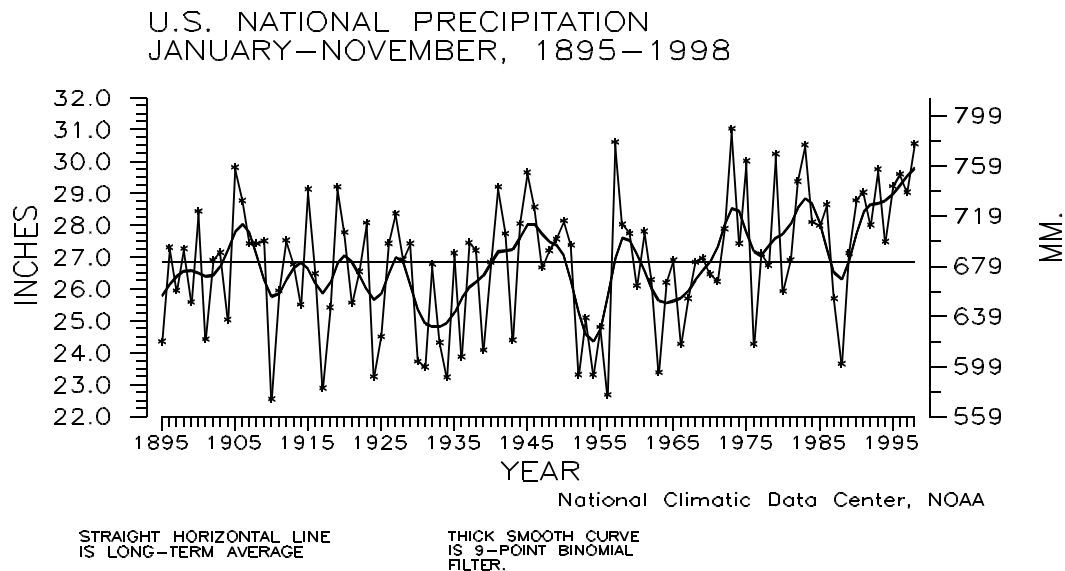


Figure 6: Preliminary precipitation data indicate that the year-to-date, January-November 1998, was the third wettest such period since records began in 1895. About 27% of the country was much wetter than normal for this period while about one percent of the country was much drier than normal. The last ten such eleven-month periods have been above- to much above the long-term mean.

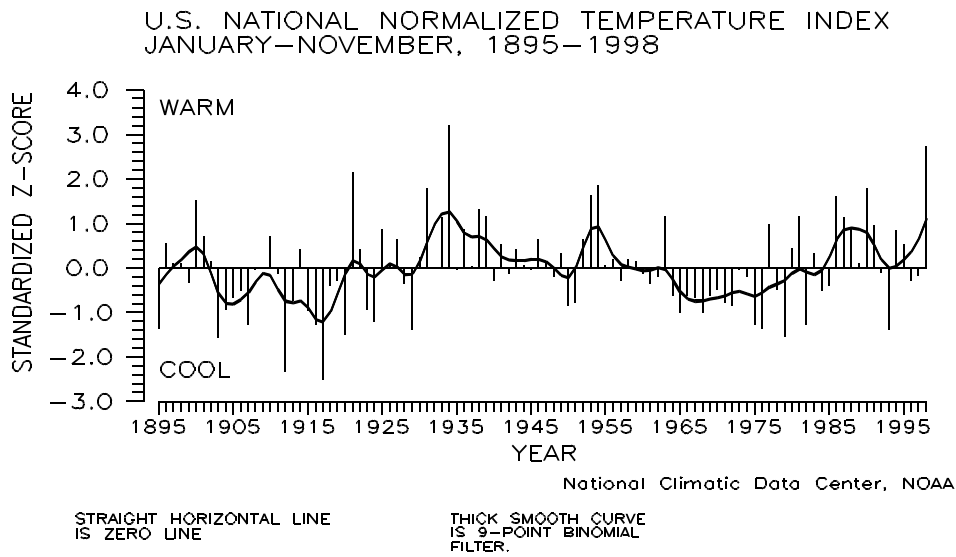


Figure 7: The preliminary national standardized temperature index ranked January–November 1998 as the second warmest such eleven-month period since records began in 1895.

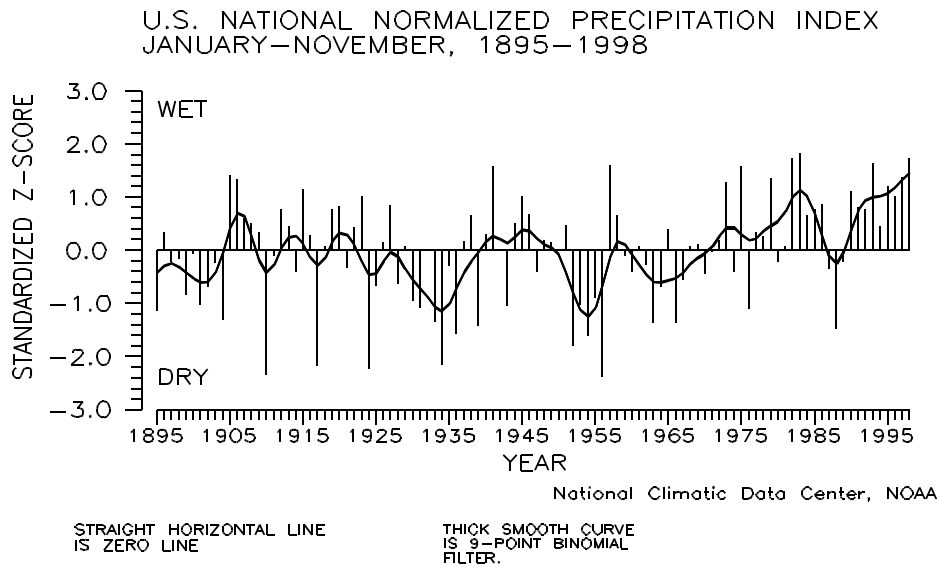


Figure 8: The preliminary national year-to-date standardized precipitation index ranked January–November 1998 as the second wettest such period since 1895.

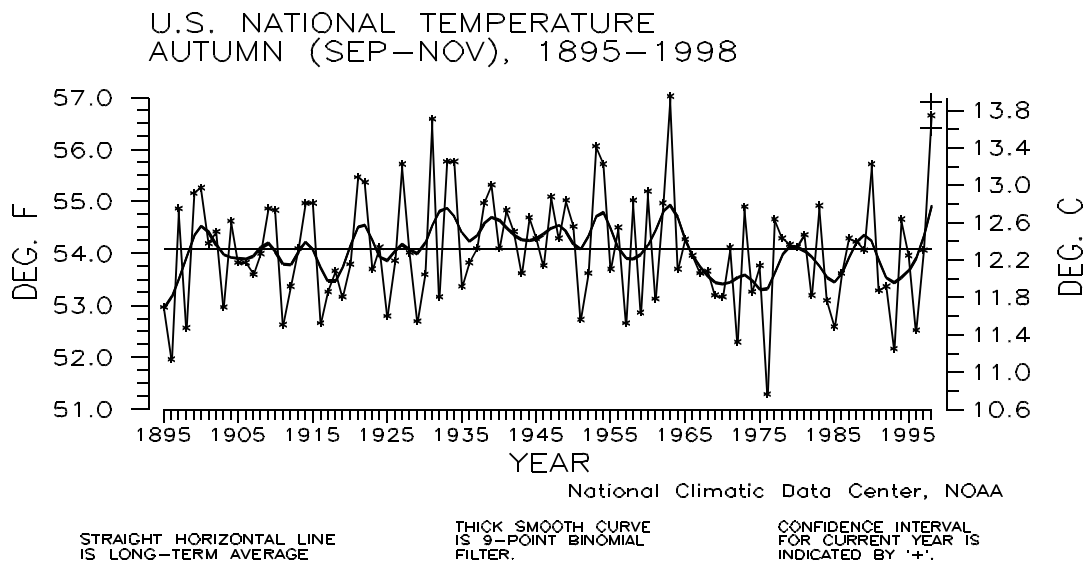


Figure 9: Preliminary data for Autumn (September-November) 1998 indicate that temperature averaged across the contiguous United States was much above the long-term mean ranking as the 2nd warmest Autumn season since 1895. Less than one percent of the country averaged much cooler than normal while a full two-thirds of the country averaged much warmer than normal.

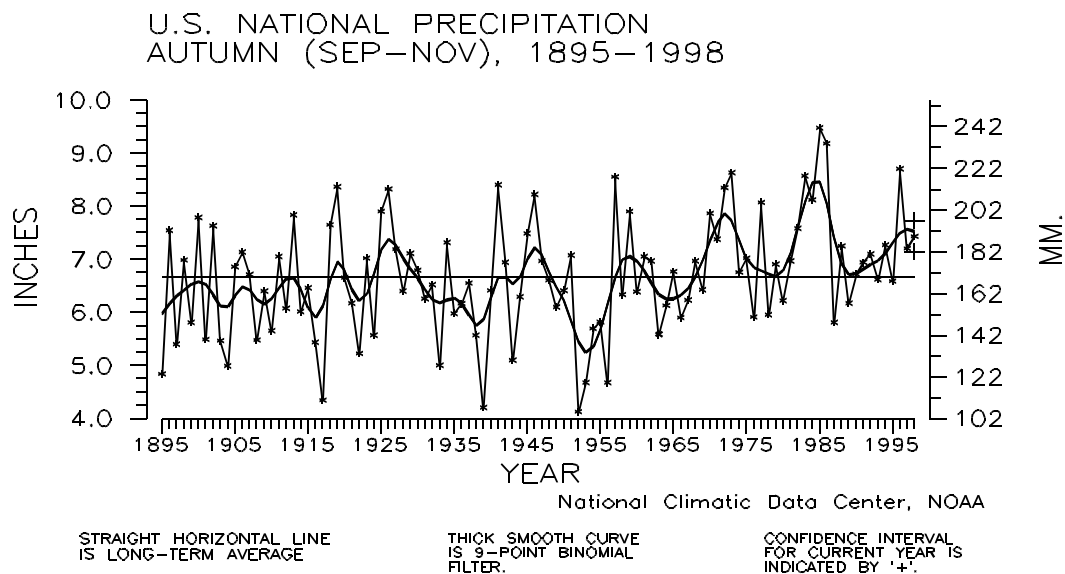


Figure 10: Preliminary data suggests that Autumn 1998 was the 24<sup>th</sup> wettest such season since 1895. Sixteen percent of the country was much wetter than normal while nearly 6% of the country was much drier than normal.

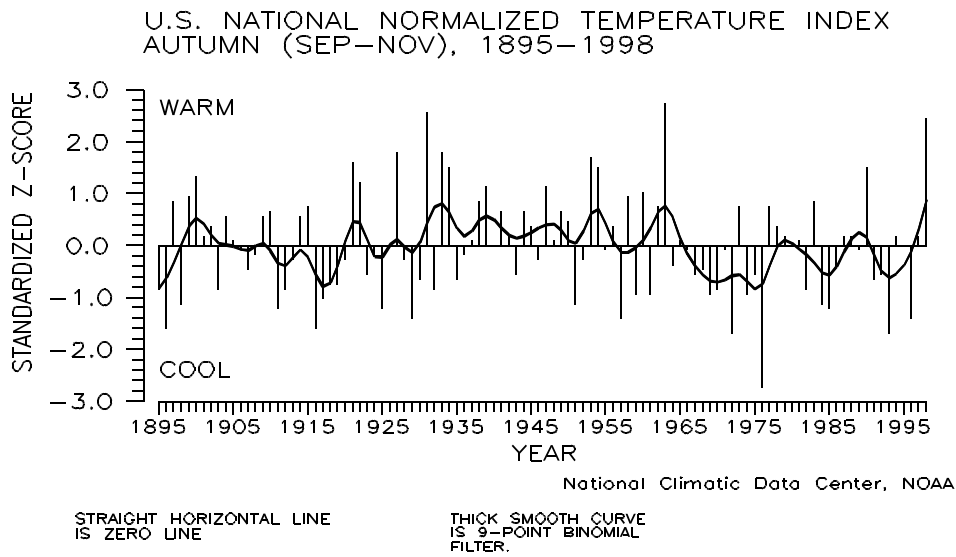


Figure 11: The preliminary national Autumn standardized temperature index ranked Autumn (Sep-Nov) 1998 as the third warmest such season since 1895.

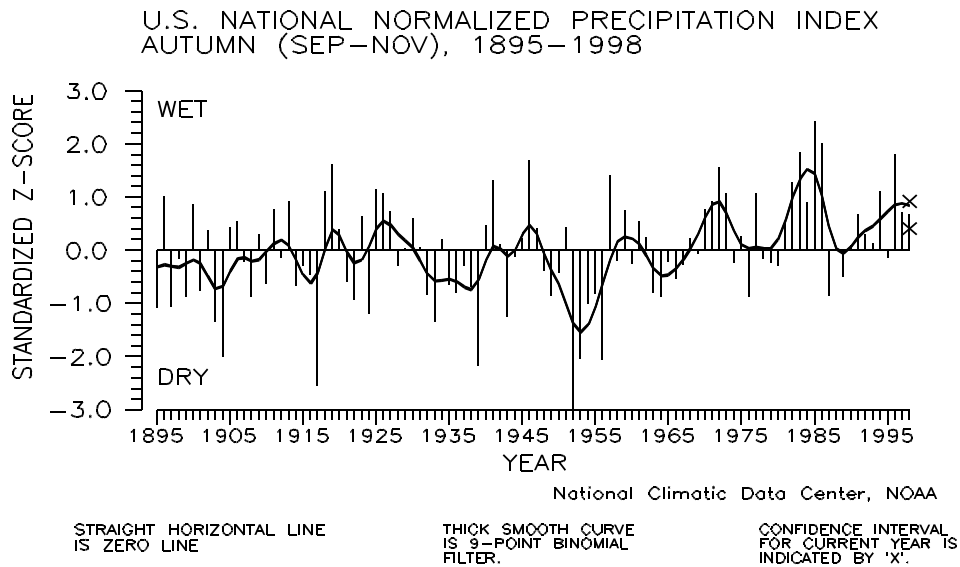


Figure 12: The preliminary national Autumn standardized precipitation index ranked Autumn 1998 as the 27th wettest such period since 1895.



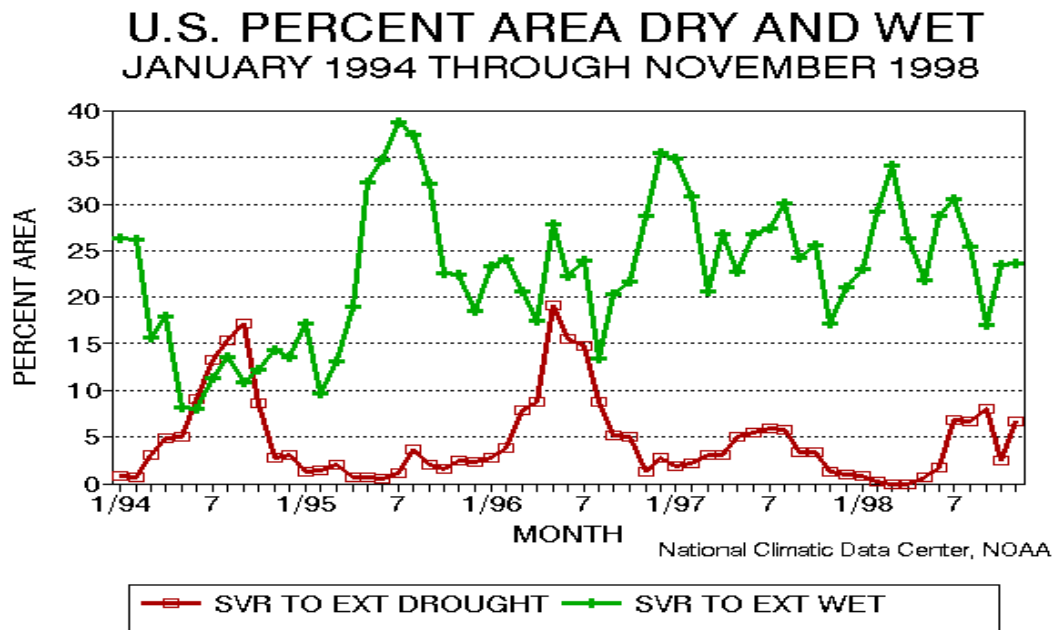


Figure 13: Long-term drought coverage (as measured by the Palmer Drought Index) showed a slight rise over October, with November 1998 having about seven percent of the country in severe to extreme drought. The percent area of the country experiencing severe to extreme wetness remained at about 24%. The core dry areas included the mid-Atlantic region, north-central Texas, central Florida, the southern Appalachians, and the Great Lakes. The core wet areas included California, the Great Basin, the northern and central Plains, the central Rockies, southern Texas, and the middle Mississippi valley.

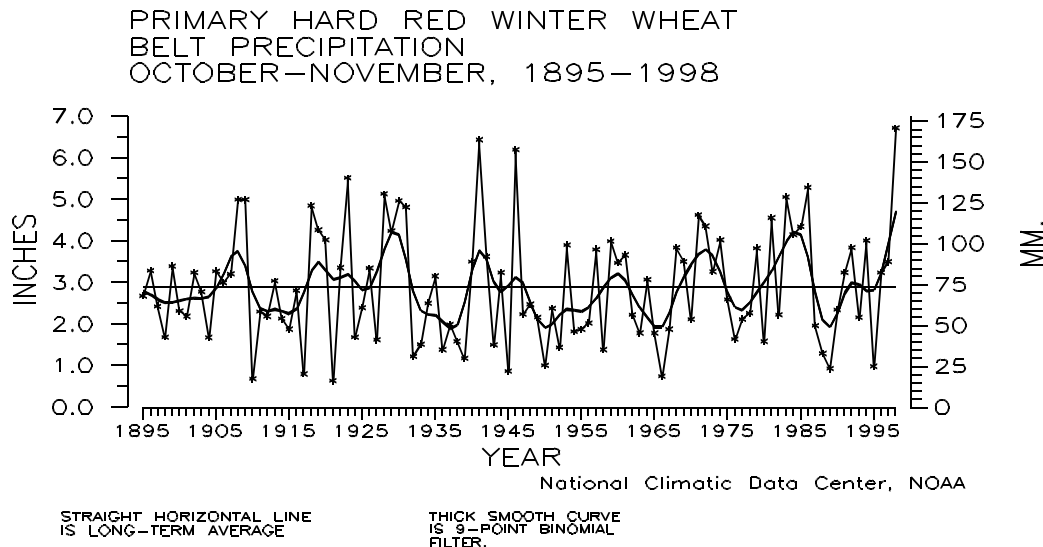


Figure 14: Preliminary data indicate that precipitation averaged across the Primary Hard Red Winter Wheat agricultural belt was much above the long-term mean and ranks as the wettest such two-month period since 1895. This area includes the panhandle of Texas, the western half of Oklahoma, all except extreme southeastern Kansas, northeastern Colorado, and southern and western Nebraska.

# WEST-NORTH CENTRAL REGION PRECIPITATION NOVEMBER, 1895-1998

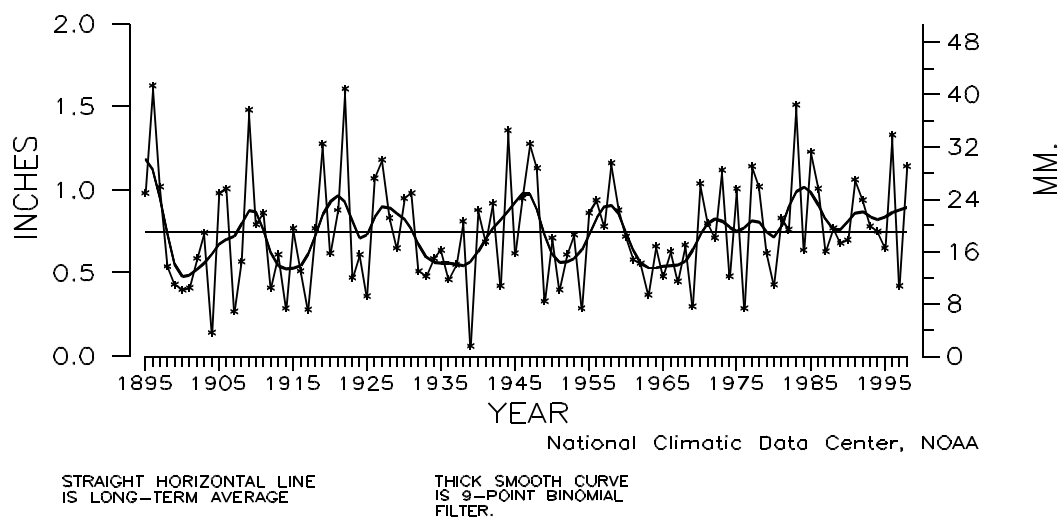


Figure 15: Preliminary data ranked November 1998 as the 13th wettest such period on record for the West-North Central Region. The West-North Central region includes Montana, Nebraska, North Dakota, South Dakota, and Wyoming.

# NORTHEAST REGION PRECIPITATION NOVEMBER, 1895-1998

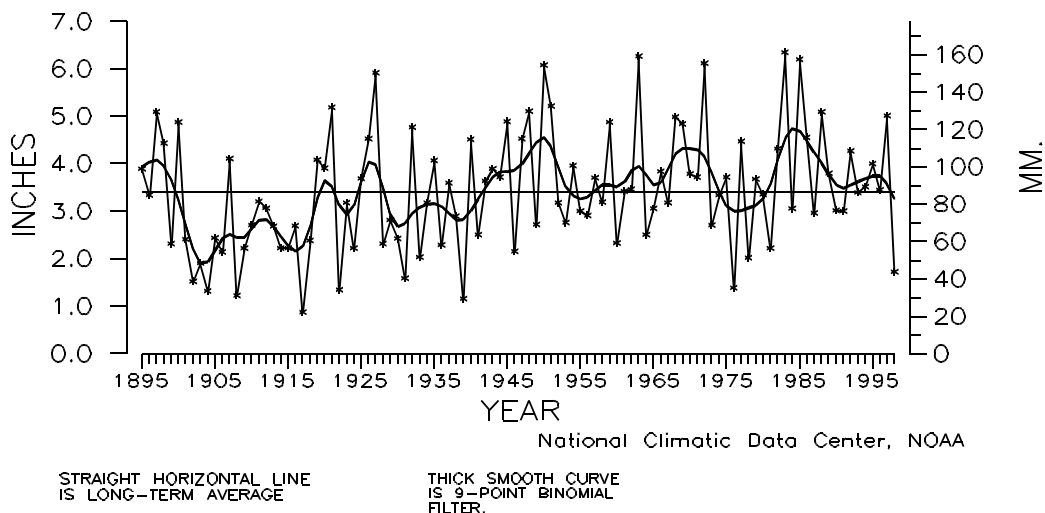


Figure 16: Preliminary data ranked November 1998 as the ninth driest such month on record for the Northeast Region. The Northeast Region includes all states from Maryland and Pennsylvania, northward.

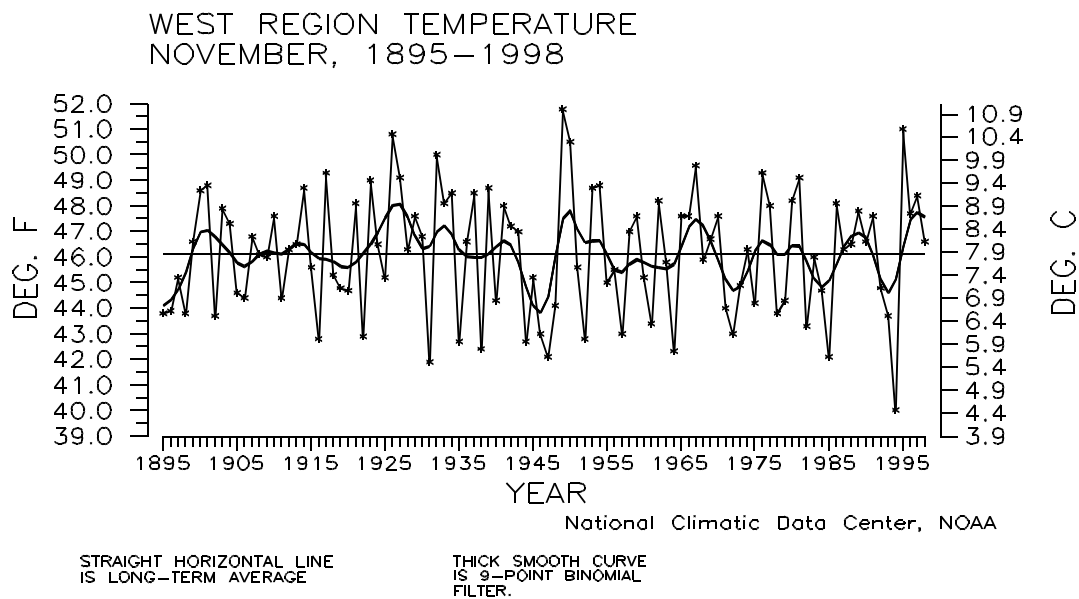


Figure 17: Preliminary data ranked November 1998 as the 48th warmest such period on record for the West Region. The West Region includes California and Nevada.

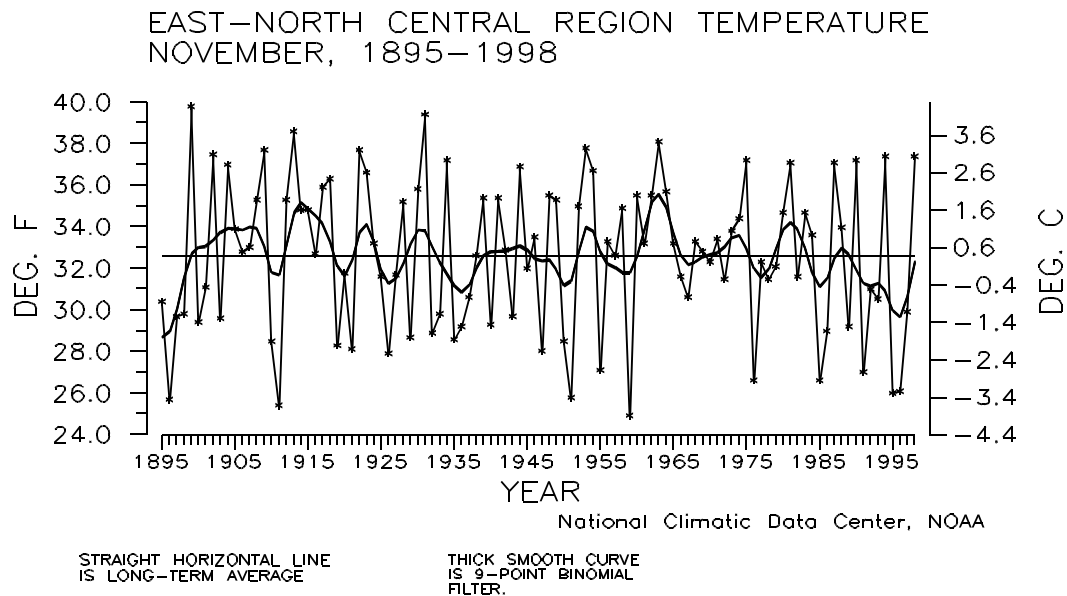


Figure 18: Preliminary data ranked November 1998 as the tenth warmest such month on record for the East-North Central Region. The East-North Central Region includes Iowa, Michigan, Minnesota, and Wisconsin.

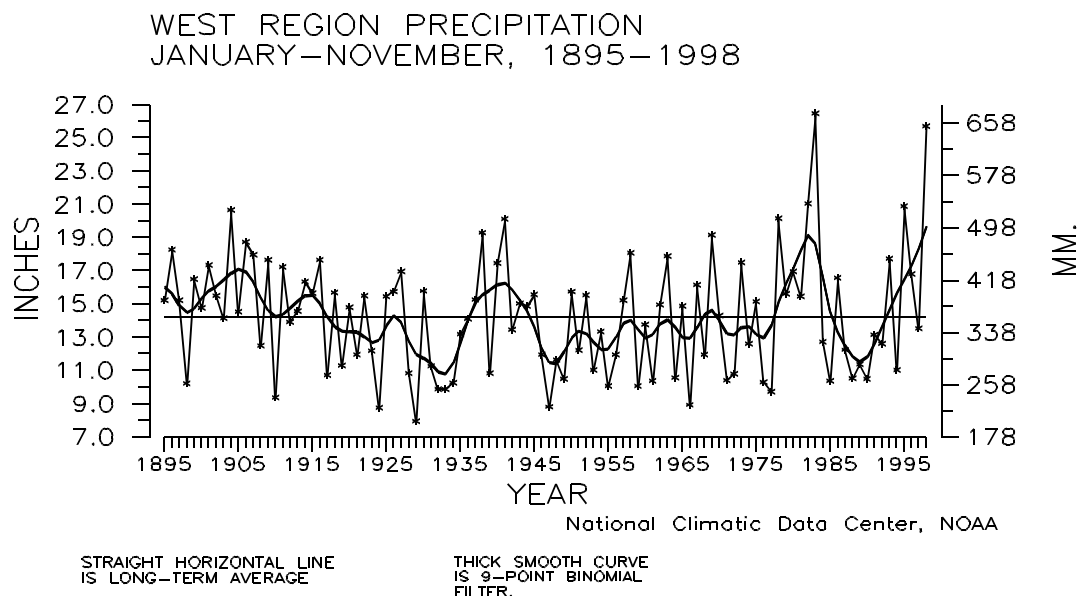


Figure 19: Preliminary data ranked January–November 1998 as the second wettest such period on record for the West Region.

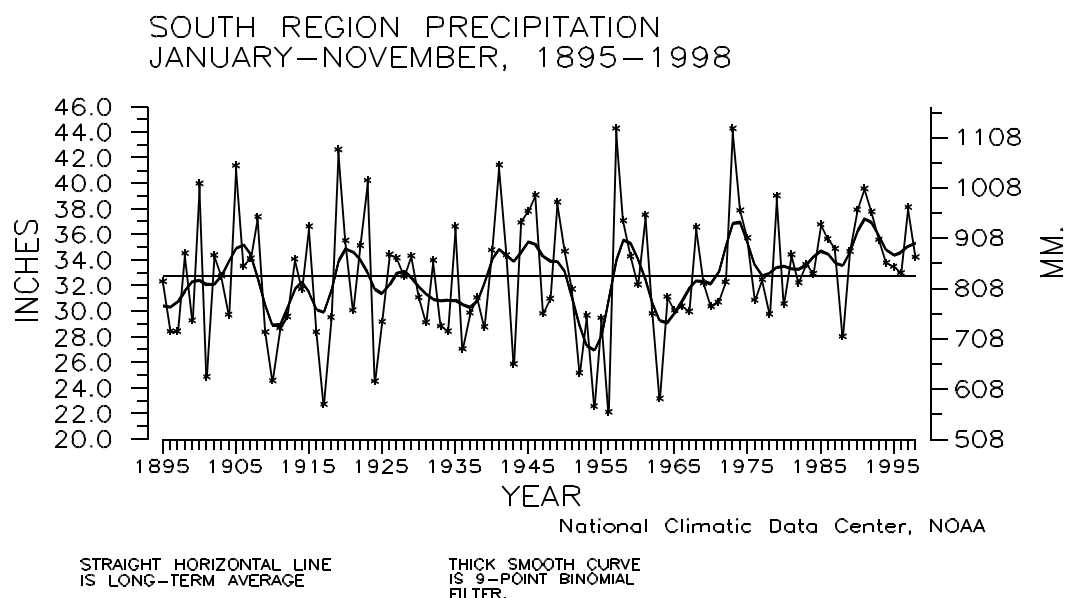


Figure 20: Preliminary data ranked January–November 1998 as the 41st wettest such month on record for the South Region. The last ten such eleven-month periods have been near to above the long-term mean. The South Region includes Arkansas, Kansas, Louisiana, Mississippi, Oklahoma, and Texas.

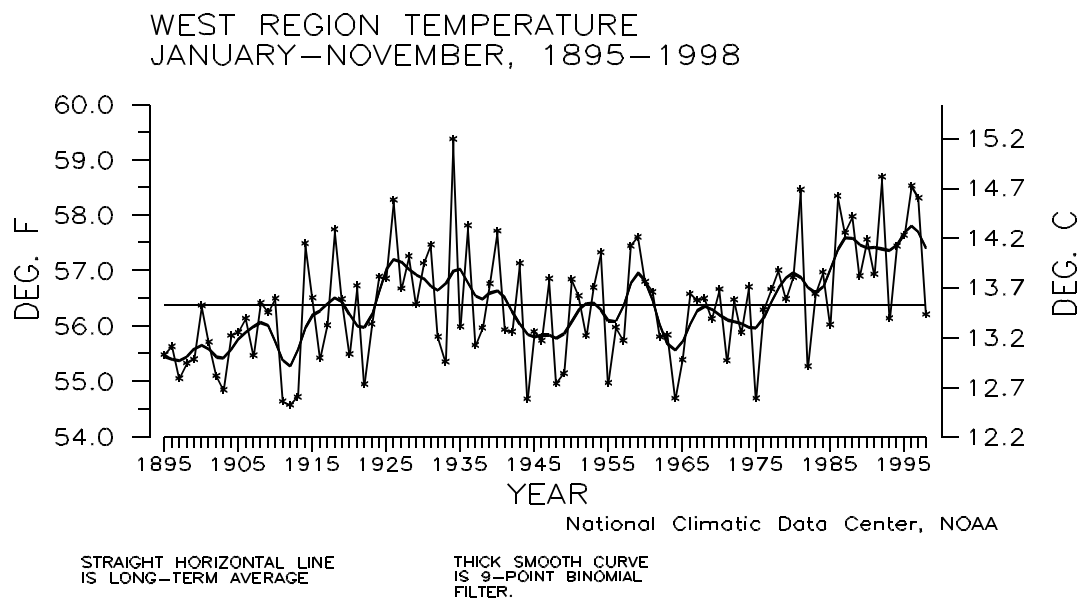


Figure 21: Preliminary data ranked January–November 1998 as the 48th coolest such period on record for the West Region. Only three of the last fourteen such eleven-month periods have been below the long-term mean.

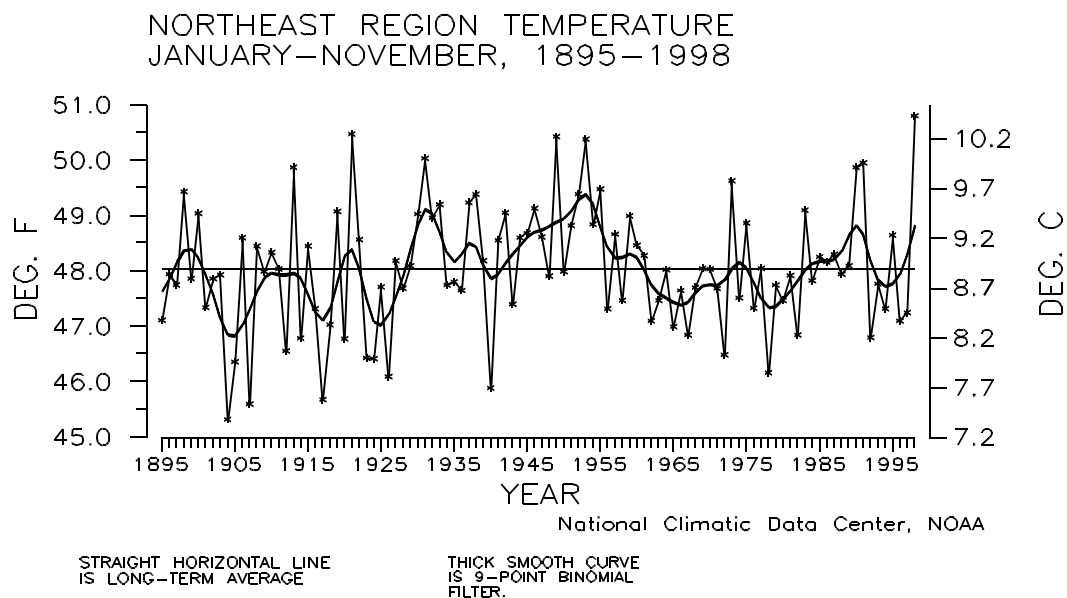


Figure 22: Preliminary data ranked January–November 1998 as the warmest such period on record for the Northeast Region.

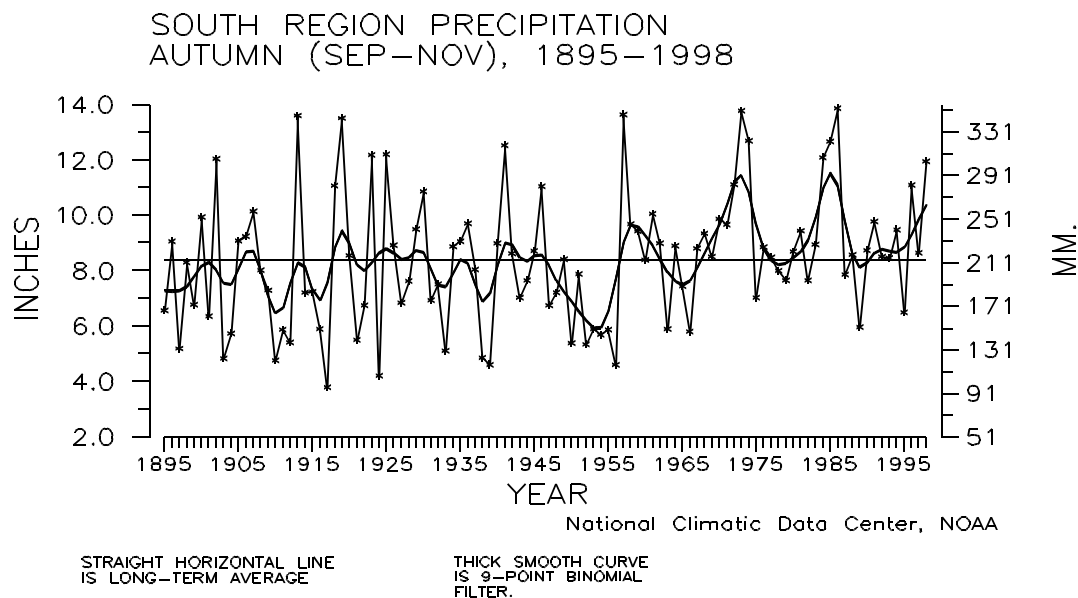


Figure 23: Preliminary data ranked Autumn (Sep-Nov) 1998 as the 13th wettest such period on record for the South Region. Tropical activity during the period aided the region in recovering from the severe drought experienced in portions of the region earlier in the year.

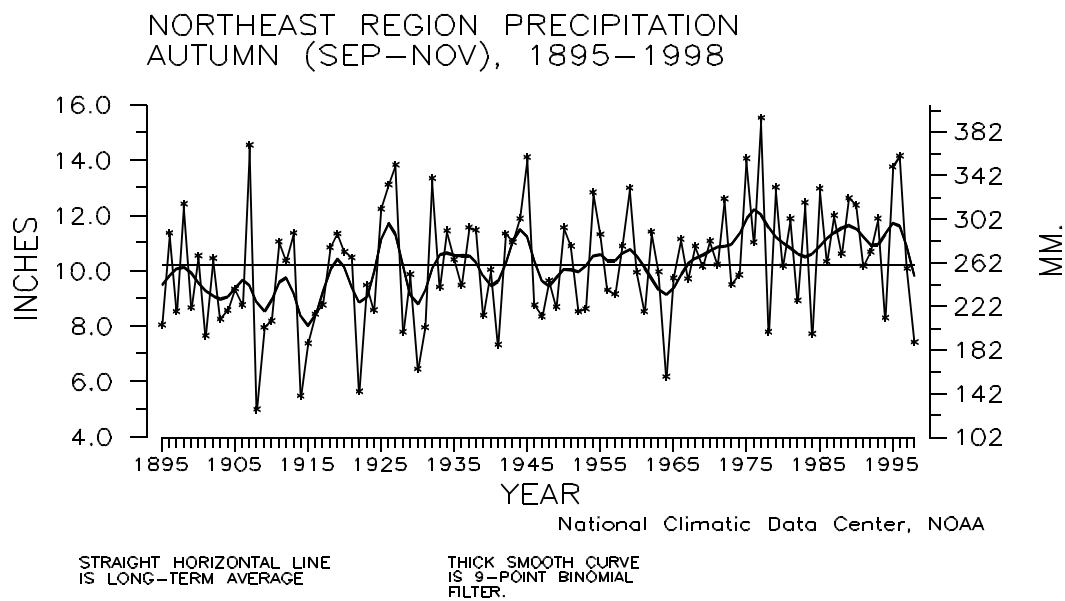


Figure 24: Preliminary data ranked Autumn 1998 as the eighth driest such month on record for the Northeast Region.

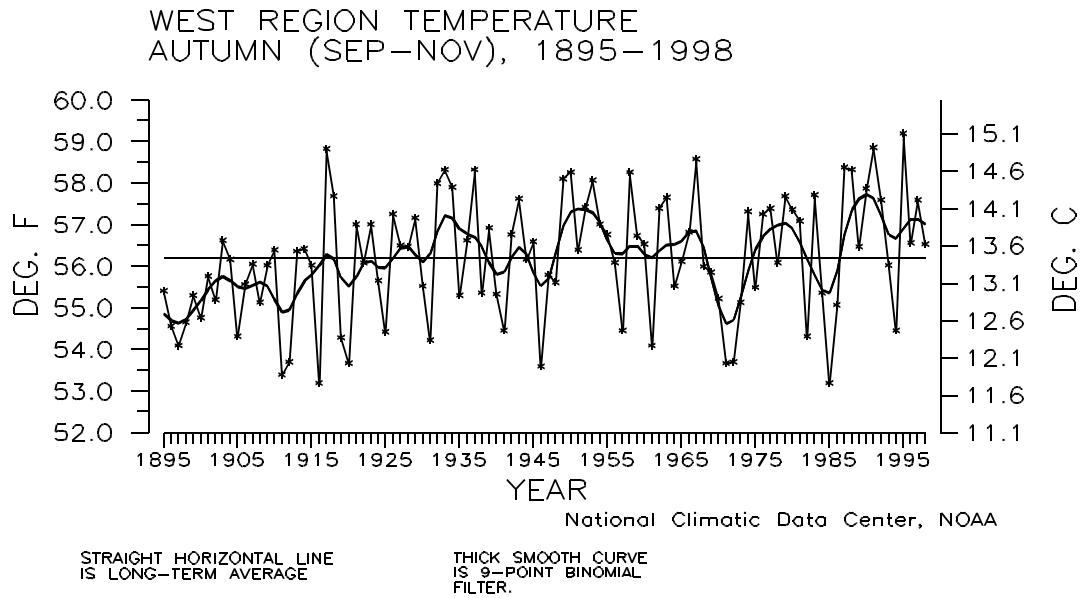


Figure 25: Preliminary data ranked Autumn 1998 as the 45th warmest such period on record for the West Region.

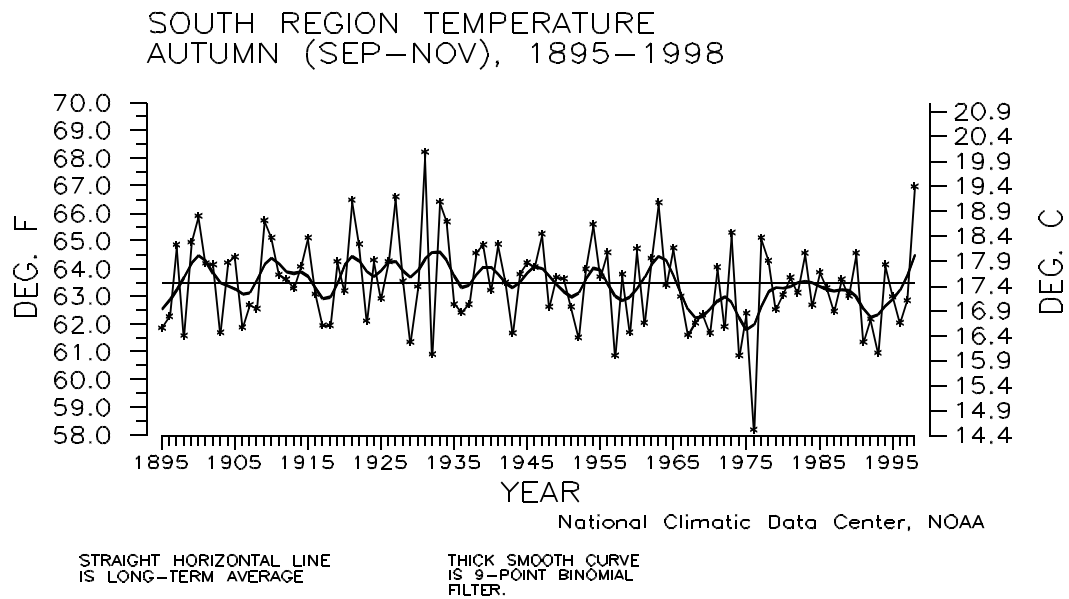
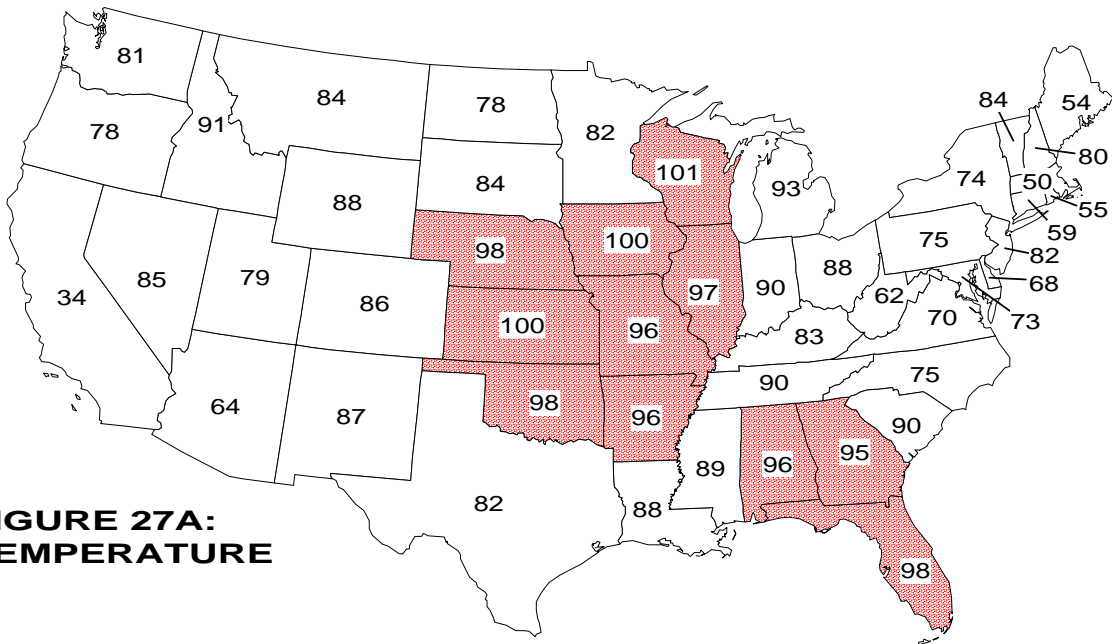
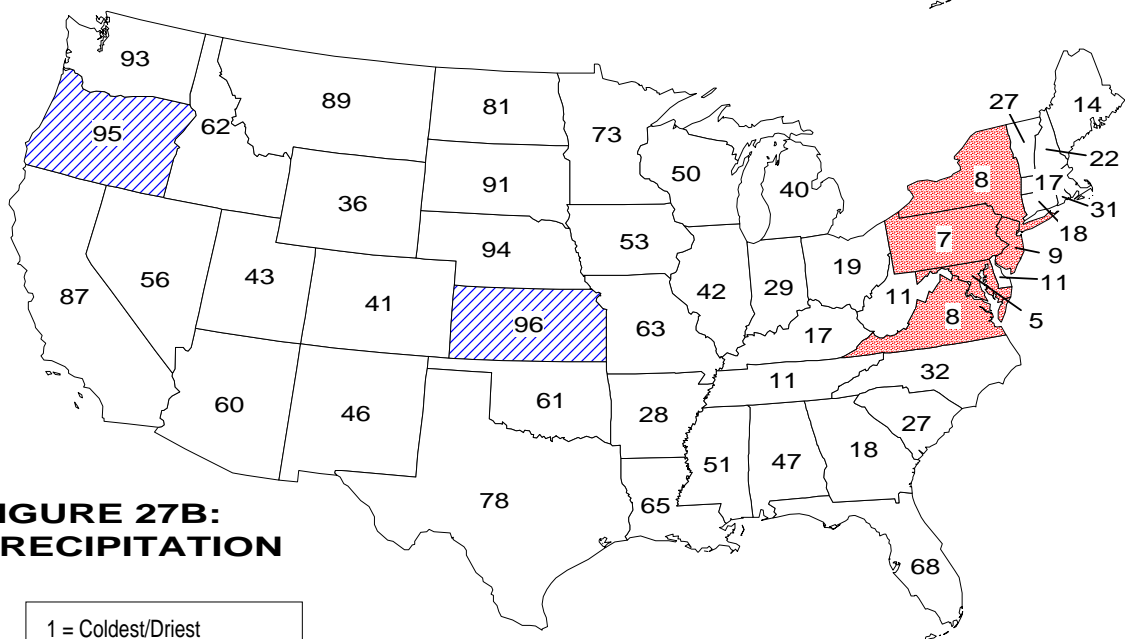


Figure 26: Preliminary data ranked Autumn 1998 as the second warmest such season on record for the South Region.

# NOVEMBER 1998 STATEWIDE RANKS



**FIGURE 27A:  
TEMPERATURE**



**FIGURE 27B:  
PRECIPITATION**

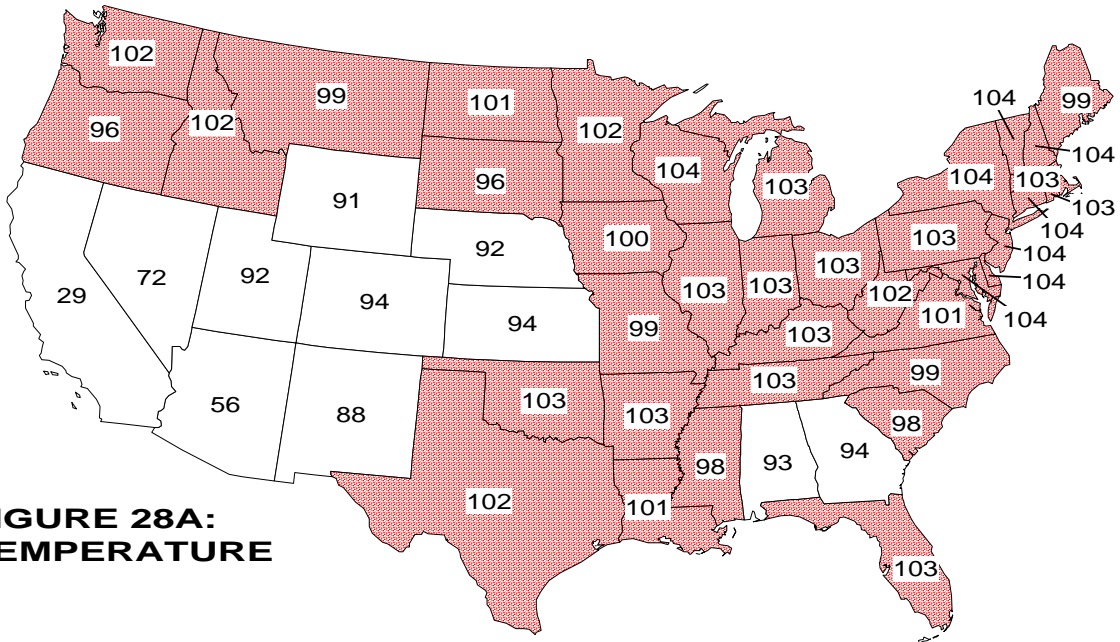
1 = Coldest/Driest  
104 = Warmest/Wettest

National Climatic Data Center, NOAA

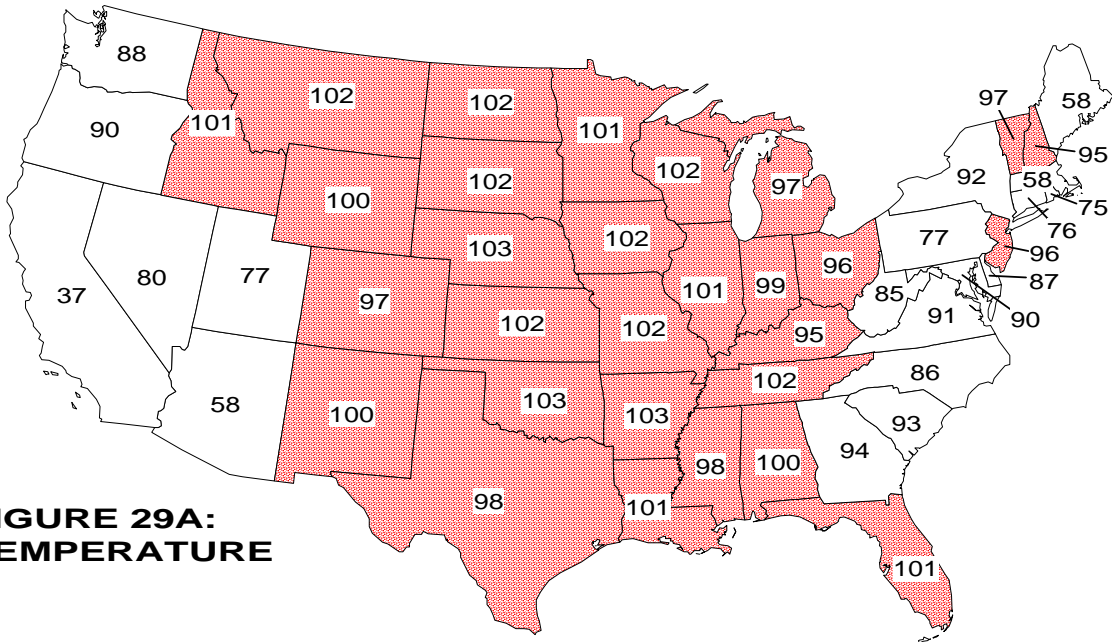
Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1998. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 95-104) are shaded.



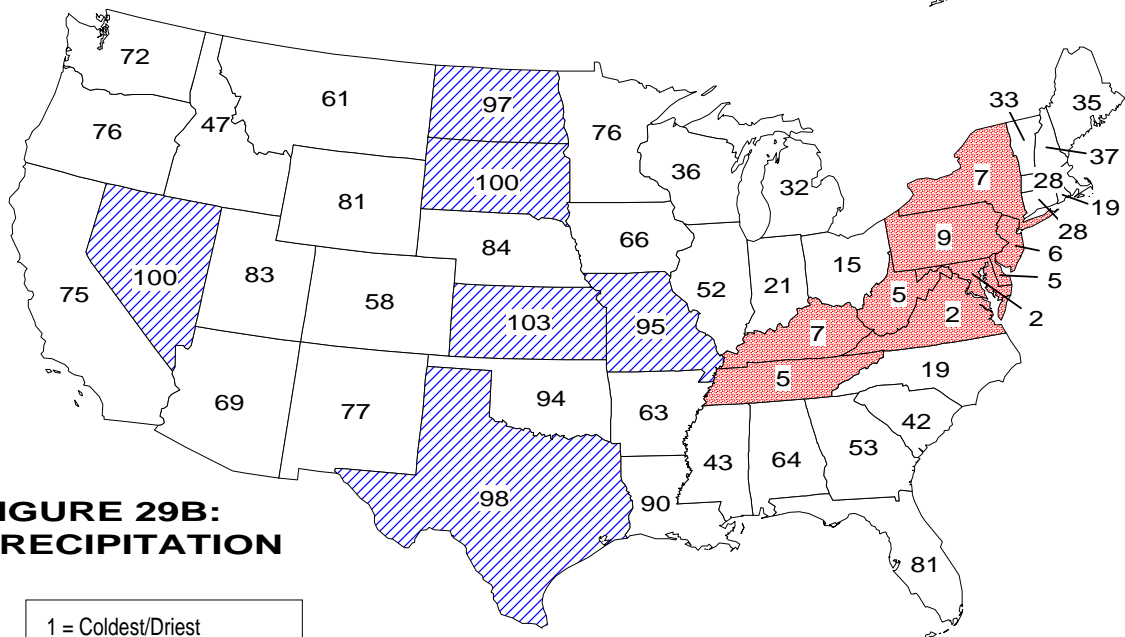
## JAN-NOV 1998 STATEWIDE RANKS



## AUTUMN 1998 STATEWIDE RANKS



**FIGURE 29A:  
TEMPERATURE**



**FIGURE 29B:  
PRECIPITATION**

1 = Coldest/Driest  
104 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1998. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 95-104) are shaded.

**Figure 27A** shows, in illustrative map form, the November 1998 temperature rankings for the 48 contiguous states. Eleven states were within the top ten warm portion of the historical distribution and twenty-nine others ranked within the warm third of the historical distribution. No state was within the top ten cool portion of the distribution and only one was within the cool third of the distribution.

November 1998 state ranks for precipitation are shown in **Figure 27B**. Two states ranked within the top ten wet portion of the distribution while eight others ranked within the wet third portion of the distribution. Five states also ranked within the top ten dry portion of the historical distribution while 16 others ranked within the dry third. ***It should be noted that these November state precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

Year-to-date 1998 statewide temperature and precipitation ranks are shown in **Figures 28A and 28B**. Thirty-seven states ranked within the top ten warm portion of the historical distribution including the warmest January-November period on record for Connecticut, Delaware, Maryland, New Hampshire, New Jersey, New York, Vermont, and Wisconsin. Nine other states ranked within the warm third of the distribution. No state was within the top ten cool and only one (CA) ranked within the cool third of the distribution. Fourteen states had their tenth wettest or wetter January-November period including the wettest such period on record for Nevada. Twenty others ranked within the wet third portion of the distribution. Only one state (MI) ranked within the dry-third portion of the distribution for the eleven-month period.

Autumn 1998 statewide temperature and precipitation ranks are shown in **Figures 29A and 29B**. Twenty-nine states ranked within the top ten warm portion of the historical distribution including the second warmest Autumn season in the 104-year period of record for Arkansas, Nebraska, and Oklahoma. Fifteen other states ranked within the warm third of the distribution. No state was within the cool third of the distribution. Six states had their tenth wettest or wetter Autumn season including the second wettest Autumn on record for Kansas. Eleven other states ranked within the wet third portion of the distribution. Nine states had their tenth driest or drier Autumn season including the second driest such three-month period since 1895 for Maryland and Virginia and the fifth driest Autumn on record for Delaware, Tennessee, and West Virginia. Nine other states ranked within the dry third portion of the distribution for the Autumn season.

***It should be emphasized that all of the temperature and precipitation ranks on these maps and in Table 1 are based on preliminary data. The ranks will change when the final data are processed.***